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Deer Economics

Red Deer Farming

The fall in velvet prices since 1979 has led to renewed interest in venison production. At current prices the returns on capital invested in livestock are similar for specialist velvet, venison/velvet and specialist venison systems which sell surplus live weaner hinds. The live sale of weaner hinds and stags is currently the most attractive policy.

Gross margins

The prices and costs used in this AgLink are as at January 1981 and are likely to become quickly outdated. Gross margins for individual farms will vary according to the production system, production levels and prices obtained.

Several gross margins are given to allow for a range of velvet production levels and prices and also for different management systems.

In determining the gross margins for velvet systems where replacements are reared and surplus weaner hinds sold live at current prices, the following assumptions were made:

- 86% caiving (survival to weaning at 3 months)
- Velvet production: 2 kg from stags 3 years and older
1.4 kg from 2 year old stags
0.3 kg from 1 year stags
- Velvet price: \$90/kg average based on 75% A grade, 20% B grade and 5% C grade velvet
- Venison price (net) \$3.50/kg carcass weight
- Byproducts: \$10.50/mature hind, \$16.50/mature stag
- Winter feed: 4 bales hay/head plus 40kg dried maize/head

The stock reconciliation for this example is given in Table 1.

The gross margin (Table 2) represents the surplus available to meet costs such as repairs and maintenance, non-seasonal labour, debt servicing, administration and management.

At current prices, about 70% of the gross revenue from a velvet farm is earned from velvet sales, 20% from the sale of live surplus weaner hinds and 10% from the sale of CFA hinds and stags for venison.

Velvet prices have fluctuated greatly over recent years (Fig. 1). Rapidly increasing supply, and market instability have contributed to the recent downturn.

Gross margin comparisons

The deer gross margin of \$96/su compares with \$17/su for sheep run under similar conditions. Fixed costs per su are similar for sheep and deer, except for interest on capital committed in fencing and livestock.

Assuming a stock value of \$23/su for sheep and \$326/su for deer, extra fence costs for deer of \$40/su, and charging interest at 13%, the comparable gross margins become \$48/su for deer and \$14/su for sheep.

Profitability

Gross margins must be adequate to meet all fixed costs, including debt servicing and a managerial reward. Fixed costs per stock unit (other than debt servicing) are similar for sheep and deer. Thus, the estimate of these costs for sheep farming given in Table 4 will be close to that for a deer farm.

By deducting these fixed costs and an allowance for interest on the capital committed in land and improvements (see Table 5), the residual available to service the capital

Table 1: Stock reconciliation for a velvet policy (breeding own replacements).

Opening	Stock on hand	Stock units*	Closing
100	Mixed age hinds	150	100
13	Weaner hinds	13	13
287	Adult stags	431	287
43	Weaner stags	43	43
40	Rising 2 year old stags	60	40
483		697	483
Purchases			
1	Breeding stag		
86	Natural increase		
Sales			
	Cast for age (CFA) hinds		7
	Weaner hinds		30
	Cull 15 month hinds		2
	CFA stags		22
	Deaths		26
570			570

*Adult deer = 1.5 stock units (su), weaners = 1 su

Table 2: Gross margin for velvet policy breeding own replacements (at January 1981).

Gross revenue	\$	\$	
CFA hinds	7 @ 175	1,225	
Weaner hinds	30 @ 500	15,000	
15 month cull hinds	2 @ 500	1,000	
CFA stags	22 @ 290	6,380	
Velvet:			
1 year stags	42 @ 0.3 kg		
2 year stags	40 @ 1.4 kg		
Adult stags	280 @ 2 kg		
	629 kg @ \$90/kg av.	56,610	\$80,215
Direct Costs			
Animal health: weaners @ \$3			
(\$2 if sold as weaners)		228	
mature stock @ \$2		854	
Velveting fees: young stags @ \$6		252	
adult stags @ \$10		3,200	
Labour for velveting: (2 days/week for 8 weeks)			
16 days @ \$40		640	
Winter feeds: 4 bales hay/head @ \$2		3,864	
40 kg maize/head @ \$185/t		3,574	
Breeding stags: 1 @ \$1,100		1,100	\$13,072
Total gross margin			\$67,143
Gross margin per su			\$96

in livestock is obtained.

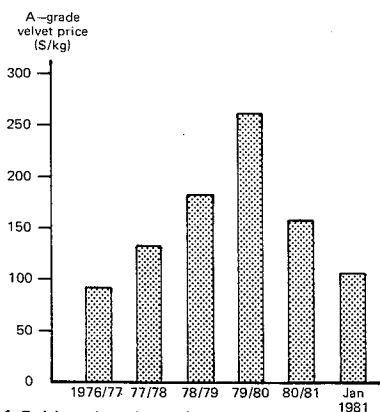
For the velveting gross margin in Table 2, this residual is obtained in Example 1 of Table 6. It is higher than that currently obtained from most traditional livestock enterprises. Interest of 13% on the value of land and improvements is allowed for in Table 6.

To demonstrate the effect of lower prices and different production systems on the gross margins and returns to livestock capital, four further examples are compared with the original velvet policy.

Example 3 is the same velvet policy as example 1, but lower velvet and weaner hind prices are used. In those cases where velvet and live animal prices are lower (i.e. examples 3 and 4b), the livestock capital values are also assumed to be lower.

Given current prices and the production levels used in these examples, the sale of live weaner hinds and stags (example 2) is the policy with the highest gross margin (\$150/su). This is followed by the venison/live sale policy (example 5, \$115/su).

The velvet/live sale (example 1) and velvet/venison (example 4b) policies are similar at about \$100/su.

**Fig. 1: Red deer velvet price trends.****Table 3: Gross margins (\$/s u) for a range of velvet prices and yields per stag**

Velvet price (\$/kg)	Velvet yield (kg/adult stag)		
	1	2	3
50	38	60	80
90	57	96	132
140	80	141	198

Table 4: Fixed costs for sheep.

	\$/su
Working expenses not assessed in gross margin (fertiliser, repairs, maintenance, etc.)	10.70
Standing charges (excluding debt servicing and managerial reward)	1.30
Plant replacement	1.30
Management charge	4.50
	17.80

Table 5: Summary of capital costs

	\$/su
Land and improvements	130
Plant and machinery	7
	137
	\$/head
Livestock	
Adult hinds	\$ 700
Weaner hinds	\$ 500
Adult stags	\$ 425
Weaner stags	\$ 275

However, the capital cost of livestock is considerably higher for policies where the base herd consists largely of hinds (examples 2 and 5). Thus despite gross margin differences returns on livestock capital for examples 1, 4b and 5 are equal at 18%. The return for the live sale policy (example 2) is 25%.

With considerably lower prices for velvet and stock, and the same production levels as above (example 2 and 4), the gross margins and returns on livestock capital are significantly reduced. However they still compare favourably with those for conventional livestock policies.

Livestock values and taxation

Profitability depends on future price trends for velvet and venison and on the prices for which stock are purchased. At current velvet and venison prices good returns to livestock capital will be achieved (examples 1, 2, 4b and 5).

If prices deteriorate in subsequent years, returns will reduce accordingly (examples 3 and 4a). The chances of lower future market prices must be considered by the investor, and returns in early years must be high enough to compensate for lower returns and capital losses if prices fall.

The price that an investor can afford to pay for deer will depend on his/her tax position as well as expected future gross margins. Deer standard values acceptable to the Inland Revenue Department are:

- Female stock \$200/head
- Male stock \$150/head

This is equivalent to \$112/su for the herd composition given in Table 1. Deer may be registered in the Nil Standard Value scheme.

A hind purchased for \$700 may be written down to \$200, thus reducing taxable income by \$500 in the year of purchase. If the investor's average tax rate is 45 cents in the dollar, this means a tax saving (or more accurately, deferral) of \$225 for each hind purchased. If the deer are eventually sold at greater than standard value the difference between the standard value and sale price becomes taxable.

Table 6: Gross margins and return on livestock capital for a range of stock policies and production prices.

	<i>Example 1</i>	<i>Example 2</i>	<i>Example 3</i>	<i>Example 4</i>		<i>Example 5</i>
	<i>Stags for velvet. Breed own replacements. Sell surplus weaner hinds and stags for venison.</i>	<i>Live sales of weaner hinds and stags. Culls for venison.</i>	<i>Stags for velvet. Breed own replacements. Sell surplus weaner hinds live. Sell cull hinds and stags for venison.</i>	<i>Venison production. Velvet stags to 3 yr old, then sell for venison. Surplus weaner hinds sold live.</i>		<i>Venison production. Sell 15 month stags for venison and weaner hinds live.</i>
	\$	\$	\$	a \$	b \$	\$
Velvet price/kg	90	N.A.	50	50	90	N.A.
Venison price/kg ccs	3.50	3.50	3.50	3.50	3.50	3.50
Weaner hind price	500	500	200	200	500	500
Weaner stag price	N.A.	275	N.A.	N.A.	N.A.	166
Gross margin/su	96	151	46	57	104	115
Less						
Fixed costs	18	18	18	18	18	18
Interest on land, improvement and plant*	18	18	18	18	18	18
Residual for livestock capital/su	60	115	10	21	68	79
Livestock capital/su**	326	461	152	187	374	446
Return on livestock capital	18%	25%	7%	11%	18%	18%
Total livestock capital (2 000 su)	652,000	922,000	304,000	374,000	748,000	892,000

* Interest charged at 13%

** See Table 5

Table 7: Current breakeven purchase price for hinds

	<i>Example 1</i>	<i>Example 2</i>	<i>Example 3</i>	<i>Example 4</i>		<i>Example 5</i>
	<i>Stags for velvet. Breed own replacements. Sell surplus weaner hinds and stags for venison.</i>	<i>Live sale of weaner hinds and stags. Culls for venison.</i>	<i>Stags for velvet. Breed own replacements. Sell surplus weaner hinds live. Sell cull hinds and stags for venison.</i>	<i>Venison production. Velvet stags to 3 year old, then sell for venison. Surplus weaner hinds sold live.</i>		<i>Venison production. Sell 15 month stags for venison and weaner hinds live.</i>
	\$	\$	\$	a \$	b \$	\$
Standard value/su	112	137	112	126	126	132
Residual for live stock capital/su*	60	115	10	21	68	79
Breakeven price/hind at tax rate 45c/\$	840	1,170	220	330	830	820

* See Table 6

Table 7 shows the prices an investor could afford to pay now for hinds, for each of the examples. It is assumed that prices remain at the current levels shown in Table 6 for examples 1, 2, 4b and 5 and that for examples 3 and 4a prices gradually decrease over the next five years from current levels to the lower levels shown in Table 6.

The figures in Table 7 are intended as a guide only and will differ according to the relevant tax rate and production performance.

Summary

Although the prices received for velvet and live stock have fallen over the past year, pre-tax returns of 18% or better are still possible from the common deer farming policies (specialist velvet, live sales and specialist venison where surplus weaner hinds are sold live in each case) when breeding hinds are purchased for \$700/head.

Taxation effects and the likely future prices for velvet, livestock and venison must be considered when deciding the price an individual should pay for capital stock.

At present prices, deer are a more profitable form of land use than conventional livestock systems. Even at the low velvet and weaner hind prices assumed in example 3 (Table 6), the deer gross margin per stock unit is more than double that for sheep and more than one and a half times that for dairying.

Deer farming is considerably less labour intensive than dairying, a factor not accounted for in gross margin analysis.

Deer are more efficient converters of pasture to lean meat than are sheep or cattle. The meat has a lower fat content and can be marketed as a premium quality product, and there are valuable by-products. These characteristics should ensure the continuation of deer farming as a profitable enterprise in New Zealand.



J. M. W. Ritchie
Farm Advisory Officer (Economics),
Advisory Services Division
Te Kuiti

K. H. Giles
Farm Advisory Officer (Animal Husbandry),
Advisory Services Division,
Rotorua